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Nordhaus Haltom & Taylor

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20 April 1981

MEMO TO: Les Taylor, Laguna Tribal Lawyer
Peter Balleau, Bureau of Indian Affairs

FROM: John J. Ward, Hydro Geo Chem, Inc.

SUBJECT: Change in scope of Phase 3 of the Laguna Project

During the meeting at the Laguna tribal offices on 27 Feb., 1981, there was some discussion regarding the direction that Hydro Geo Chem was to take in the evaluation of the water quality monitoring program. The purpose of this memo is to present what I believe to be the areas of major concern, and what areas need only a cursory examination. I would like you to comment on each of these points, and change or add to what you feel is erroneous or incomplete. When I have your comments we can formulate a more detailed and site-specific plan.

1. Rio San Jose. There are four avenues that the uranium industry can impact water quality of this stream. All are indirect, that is, there is no mine discharge directly into the stream.

The first is from the Ambrosia Lake Mining District, via the Arroyo del Puerto and the San Mateo Creek. Whether this creek is normally tributary to the Rio San Jose is in dispute.

The second is discharge into the Rio Paguate, tributary to the Rio San Jose. The Jackpile mine activities may degrade the water quality of that stream. In addition, the Sohio mill lies in a tributary drainage to the Rio

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Moquino and there is a potential for pollutant travel along this path.

The third avenue is from the city of Grants sewage flow. The volume of this flow is proportional to the growth of the city which is tied to the growth of the uranium industry.

The fourth is from the artificial lowering of the potentiometric surface of the aquifers underneath the Rio San Jose. If this happens, the groundwater gradient may reverse itself, inducing river water to flow into the alluvial aquifer.

There are currently two other technical studies of the Rio San Jose (to our knowledge), and an environmental impact study on the Rio Paguate. The New Mexico Environmental Improvement Divison, in cooperation with the EPA, has established a monitoring program in the environs of the Ambrosia Lake Mining District and downstream. The impact of induced flow from the Rio San Jose into the alluvial aquifer will be evaluated in Phase 2, the numerical modeling.

It is our belief that no new monitoring program should be established in this stream. However, the old program established by Lyford and continued until June 1979, should be re-established. Hydro Geo Chem would assume this as a part of our contract, under Phase 3.

2. Jackpile Mine Area. There is chemical evidence that mining activities are degrading water quality in the Rio Moquino and Rio Paguate. We have not yet been able to ascertain the extent of monitoring activities by Anaconda and their consultants. Mr. Taylor has told us not to study this area extensively because of possible duplication of effort with the upcoming EIS study. It is our belief that monitoring of the Rio Paguate downstream of the mine is very important; also important is periodic monitoring of

groundwater levels via an unused mine well. This could easily be incorporated into the Rio San Jose monitoring program.

3. Kerr McGee, Bokum, Exxon, Conoco Minesites. All of these sites are inactive or have not been constructed; a unique opportunity now exists to collect valuable baseline data in advance of mining. Recommendations for a monitoring program will be made with this in mind. It will concern itself predominantly with sediment and spring water sampling in the Rio Puerco and Canon Salado areas. It need only continue for a short time.

4. Ideal Basic Industries La Ventana Coal Plant. This company plans to discharge 1.1 cfs of process water, quality presently unknown, into the Rio Puerco. It is probable that none of this flow will reach the Pueblo area, unless carried downstream by floods. Monitoring for this site should not require more than the same baseline data collection described in item 3 above.

5. Sohio Mine and Mill. This mine pumps about 25-30 gpm from the Jackpile sandstone and an unknown amount from the Westwater Canyon aquifer. Though it lies in the Rio Moquino basin, the mill does not normally discharge water to surface streams. A monitoring plan to periodically sample Rio Moquino waters will be designed. The extent of this monitoring cannot be ascertained until we receive a description of the current and planned monitoring effort from Sohio Inc.

6. Tracer Test. At the outset of the project we believed that an artificial tracer injection and monitoring test was feasible if the problem of determining seepage from mill ponds or other mine water impoundments existed. Also possible was the use of environmental tracers such as

halocarbons or isotopes. As work progressed we realized that the possibilities for such tests were limited to the Sohio and Jackpile-Paguate minesites.

Our recommendations are: 1) A tracer injection test should not be initiated unless the EID or the EPA is willing to cooperate. The amount of tracer needed, the very long duration of such a test, and the difficulty in gaining the mine's cooperation, would make this type of test difficult to perform. 2) A test using sulfur and oxygen isotopes as environmental tracers should be run on Rio Paguate and Rio Moquino waters upstream and downstream of the Jackpile-Paguate minesite. The value of this effort is that field work would consist of one-time sample collections of creek water; the analyses are easily done; and the results of the test are of value, both as a demonstration of the isotopes use, and as an indicator of the source of the sulfate. 3) A similar test could be run at the Sohio millsite if access could be gained to the millpond, and their monitor wells.

In conclusion, I believe that the six areas outlined above should constitute the bulk of our Phase 3 effort. Your comments on this are needed and appreciated. Either comment directly on this memo, or reply in a separate letter. Thank you.